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SIPDIS

STATE FOR EUR/SE AND NP/NE

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TAGS: [ENRG](#) [KNNP](#) [TRGY](#) [TU](#)

SUBJECT: TURKEY REJECTS US OFFER TO EXCHANGE HIGH-ENRICHED  
FOR LOW-ENRICHED URANIUM

REF: ANKARA 775

1. Summary: A DOE team, accompanied by the Commercial Manager for the French energy company CERCA, visited Ankara from July 10-13 to discuss with Turkish Atomic Energy Commission (TAEK) officials Turkey's participation in the Foreign Research Reactor (FRR) Spent Nuclear Fuel (SNF) Acceptance Program. DOE Reps. outlined the offer to exchange spent highly-enriched uranium (HEU) rods for low-enriched uranium (LEU) rods procured by the USG from CERCA for Turkey. TAEK President Cakiroglu pledged Turkey's desire to work with the US on the FRR/SNF project but expressed concern about the number of LEU rods offered and questioned whether Turkey's DOE Y-12 energy credits could be converted into additional LEU rods. DOE and Embassy reps. explained that the LEU offered exceeded the HEU to be swapped and, while agreeing to take Cakiroglu's question under advisement, made clear it could not be linked to this time-sensitive offer which required approval by July 18 to secure Turkish HEU pick up by a ship scheduled to traverse the eastern Mediterranean in October, 2005. Cakiroglu deferred to Energy Minister Guler for a final decision. On July 18, Cakiroglu informally advised Embassy that Turkey would not/not participate in the October shipment. Formal notification is pending. He also inquired about the status of the ratification of the Peaceful Uses of Nuclear Energy Agreement that the U.S. and Turkey signed in 2000. A DOE summary report of the discussions is at para. 9. End Summary.

2. Charles Messick of DOE Savannah River Site, Dr. Jim Matos of Argonne National Laboratory, CERCA Commercial Manager Helios Nadal, and Deputy PolMilCouns met on July 11 with TAEK President Okay Cakiroglu, Vice President Erdener Birol, and Vice President Ali Alat to discuss the exchange of 8 new LEU rods for 30 spent HEU rods at Turkey's Cekmece Research Reactor. Messick emphasized the urgency of an immediate decision and laid out the mechanics of the proposed Oct. 1 pick-up of Turkey's HEU, including DOE's request that Turkey transport the HEU rods to a Mediterranean port to save shipping time and costs. He emphasized that, based on the low level of unused U-235 contained in Turkey's HEU rods, the offer of 8 LEU rods was generous, with the actual equivalent closer to 6 rods. The remaining U-235 in Turkey's HEU rods would be used up soon and the 8 additional LEU rods would provide Turkey with a fresh core to last for years. CERCA Manager Nadal said the fresh LEU could be deliver to Turkey by April 2006 if Turkey immediately agreed to the exchange. He laid out the dollar value of the fresh LEU units Turkey would receive.

3. TAEK President Cakiroglu disputed the remaining life in Turkey's HEU rods, suggesting they would be usable for three more years. He dismissed HEU disposal concerns, joking that Turkey intended to enter the spent fuel storage market within 10-20 years to compete with western countries. He balked at the projected April LEU delivery date, saying Turkey expected to receive the fresh LEU before shipping its spent HEU.

4. Cakiroglu continued that TAEK did not want to use its 16 existing LEU rods to keep the existing reactor operating until the fresh LEU arrived in April. Those rods were designated for use in the core of a new reactor that should come on line within 3.5 years as part of a program that included upgrading the existing reactor. Cakiroglu added that Turkey was ready to cash in a 1984 DOE Y-12 credit for 21 kilograms of LEU (note: the actual credit is for 4.7 kgs of HEU which converts to about 21 kgs of LEU) still on the books and convert that into completed LEU fuel assemblies to supplement 8 LEU on offer to support this project. According to Cakiroglu, TAEK hoped to start talks with Westinghouse and a French firm regarding construction of the new reactor. Ten construction sites had been evaluated but TAEK required preliminary design parameters from potential site builders to make the final decision. TAEK's current plan calls for negotiations with the companies to begin in Fall 2006 and builder selection in early 2007.

5. Turning to the DOE request for Turkey to ship overland the spent HEU rods to a Mediterranean port, Cakiroglu demurred, saying Turkish transport regulations were very stringent and, given the large number of Aegean ports, Turkey did not want to undertake the costs and security risks associated with such a movement. Messick responded that DOE would work with

Turkey to identify the best port, but requested that Turkey consider ports that would reduce shipping time. The ship would arrive in the United States in mid-November.

16. Deputy PolMilCouns explained that the current HEU/LEU exchange could not be linked to liquidation of Turkey's Y-12 credit. The HEU/LEU exchange was a one-time offer based on current DOE funding and the scheduled shipment of HEU from other countries through the eastern Mediterranean. There might not be another ship in the region for months or years and a second offer would be contingent on DOE funding priorities at that time. She underscored that Turkey could not be guaranteed an equivalent offer and urged a decision on the merits of this exchange alone. In response to Messick's statement that conversion of Turkey's Y-12 credits would be contingent on US ratification of the Peaceful Uses of Nuclear Energy Agreement, Cakiroglu suggested that a work-around, such as the one identified for the current HEU/LEU swap proposal, could be identified. Deputy PolMilCouns said that issues related to the nuclear energy agreement were being worked in Washington and offered to take back Turkey's request to Washington for consideration.

17. Cakiroglu deferred decision on the exchange to Minister of Energy Hilmi Guler, and said it would take time to get the Minister's input but agreed that CERCA could submit a draft contract to TAEK for initial review. Messick emphasized that the July 18 deadline was firm and urged Cakiroglu to conduct the necessary reviews immediately. On July 18, Cakiroglu notified Deputy PolMilCouns that the MFA will formally notify the Embassy that Turkey has decided to "wait for the next shipment." She reiterated that Turkey may have to wait months or even years for the next ship to pass by Turkey and suggested that any future offer was unlikely to match the offer on the table. Cakiroglu responded that, while Turkey wanted to assist the USG, it was happy to continue using its HEU until that time came. Comment: Post has not received MFA notification of Turkey's rejection of this offer, which may be a result of MFA summer rotations and vacations, which have significantly thinned its ranks in the short term. End Comment.

18. Cakiroglu explained that Turkey wants to cash in its Y-12 credits to increase the number of LEU units Turkey would receive in exchange for its HEU. He lamented the lack of USG ratification of the Peaceful Uses of Nuclear Energy Agreement and looked forward to its ratification in order to facilitate Turkey's compensation for the Y-12 credits. He added that TAEK had been investigating the chain of events leading to Turkey's agreement to deliver HEU to the USG in 1984 and said some documentation suggested that Turkey's credit was with Westinghouse, and not the USG. If that proved to be the case, he queried whether agreement ratification was necessary for Turkey to be compensated. Deputy PolMilCouns offered to investigate the issue further but suggested it was unlikely that the credits were with private industry.

19. Following is the text of the DOE Trip Report prepared by DOE Savannah River Site Manager Chuck Messick:

Begin Text of Report:

Turkish Atomic Energy Authority (TAEK)  
Ankara, Turkey  
Regarding the TR-2 Research Reactor at Cekmece Nuclear  
Research and Training Center (CNAEM)

July 10 - 13, 2005  
VISITING TEAM

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#### PURPOSE OF THE VISIT

To discuss U. S. nuclear weapons nonproliferation policy and  
program issues concerning TAEK,s participation in the  
Foreign Research Reactor (FRR) Spent Nuclear Fuel (SNF)  
Acceptance Program near-term shipment involving the TR-2  
Research Reactor. Immediate consideration and determination  
is required if TAEK will participate in this shipment.

#### INTRODUCTION

The Turkish Atomic Energy Commission was founded in 1956 as a  
first step in the recognition of peaceful uses of nuclear  
energy in Turkey. The first task of this Commission was the  
establishment of the ekmece Nuclear Research and Training  
Center (CNAEM) in 1962 in Istanbul. The first Turkish  
Research Reactor, TR-1 (1 MW), was also installed and  
operated in the same year at CNAEM. TR-1 was operated  
continuously for fifteen years from May 27, 1962 to September  
13, 1977. The 32 fuel assemblies from TR-1 were sent to  
Idaho in 1984. The TR-1 reactor was functionally replaced by  
the 5 MW TR-2 reactor in 1982 to meet the increasing demand  
for radioisotopes. The TR-1 reactor components still exist  
at CNAEM.

At the time of this visit, the reactor is operated briefly  
approximately once per week, if at all. TAEK indicated they  
have plans to increase power from 5 MW to 10 MW in the  
future. Currently, 18 HEU fuel assemblies and three LEU fuel  
assemblies are in the core.

#### FUEL INVENTORY

The TR-2 fuel assemblies are MTR type assemblies.  
Characteristics of TR-2 fuel and control assemblies that may  
be returned to the U.S. are provided below.

HEU  
Nominal Number at Facility 30 Consisting of:  
18 standard (23 plates),  
1 fresh control  
instrumented assembly  
2 irradiation (12 plates)  
1 standard instrumented  
assembly  
8 control (17 plates))  
Enrichment 93.3 %  
Fuel Meat U-Al alloy  
Clad Al  
Initial U-235(g) /assembly 281 standard  
(2 irradiation@146; 1 std  
instrumented@281;  
and 1 control instrumented @  
208 )  
8 control @208  
Burn-up 40% average

#### LEU (Non-US origin/Not returnable to the US)

Nominal Number at Facility 16 Consisting of:  
10 standard (23 plates)  
2 irradiation (12 plates)  
4 control (17 plates)  
Enrichment 19.8%  
Fuel Meat U3Si Dispersion in Al  
Clad Al  
Initial U-235 (g) / assembly 406 standard (300 control,  
212 irradiation)  
Burnup (see below)

Only two standard LEU assemblies and one irradiation assembly  
are in the core at present. The standard elements have a  
burnup of about 7.5% and the irradiation assembly 12.5%.

Note 1: One of the irradiation assemblies is a fresh LEU  
assembly. The irradiation assemblies have 12 plates (TR2  
1004) with tubes in the center for irradiation activities.  
The assembly construction is slightly different from the

standard assembly.

Note 2: The instrumented assemblies are both HEU, one with little burnup and the other unirradiated.

Note 3: It was identified during this trip that the TR-2 LEU fuel assemblies does not have uranium enriched in the United States making this material ineligible for shipment to the US under the FRR SNF Acceptance Program. However, it is noted that the FRR SNF Acceptance Program,s EIS is incorrect.

#### CONDITION OF FUEL

The team did not visit the reactor facility, nor view the potential fuel that may be shipped. From the previous assessment conducted in January 2005, all spent fuel is stored in the large part of the TR-2 pool. Most of the fuel is stored in two baskets located on the floor of the pool. The assemblies in the core are located in the TR-2 side of the pool. The reactor pool is stainless steel lined. All spent fuel is stored in aluminum racks. Fresh fuel is stored in a vault located one floor below the reactor.

An evaluation of fuel was previously conducted by WSRC.

#### FACILITIES RELATED TO PACKAGING

Not conducted during this visit

#### POTENTIAL TRANSPORTATION ROUTE FROM THE REACTOR TO THE PORT OF EXPORT

Not discussed during this visit

#### REGULATORY AUTHORITY

The TR-2 at the ekmece Nuclear Research and Training Center is part of the Turkish Atomic Energy Authority. There is no separate nuclear regulatory authority in Turkey at the present time.

#### POTENTIAL PROBLEM AREAS

An agreement in principal must be made by Monday, July 18 2005, to allow inclusion of the TR-2 fuel in this planned shipment. Immediate follow-through on allow pre-shipment activities must occur to meet the planned shipment schedule noting that the shipment has already been delayed to the point that severe problems will occur if the shipment is further delayed.

#### DISCUSSIONS, AGREEMENTS, AND ACTIONS

1. The participants discussed the urgent need to reach an agreement in principal and, if approved, actively work toward all pre-shipment actions required to initiate the shipment. The three primary issues discussed involved the applicability of the Agreement for Nuclear Cooperation between the GOT and the USG, consideration for unused U-235 still contained in the HEU that would be shipped, and the schedule for delivery of additional replacement LEU fuel from a fuel fabricator. TAEK understood that TAEK,s decision deadline is the close of business Monday, July 18, 2005. An agreement in principal is expected to be in the form of an email message from TAEK to DOE.

2. Previous discussions, agreements, and actions were documented in the DOE Trip Report from October 12, 1999, January 14, 2005, and NAC Internationals, trip report dated March 14, 2005.

3. TAEK understands that DOE has an urgent need to reach an agreement in principal to establish a shipment of FRR SNF from the eastern Mediterranean area to include the TR-2 HEU fuel to arrive in the United States in the calendar year 2005. If the agreement in principal is reached, DOE will prepare a proposed contract and issue to TAEK the week of July 18, 2005.

4. DOE and the US Embassy in Ankara explained that the Agreement for Nuclear Cooperation (hereafter referred to as Agreement) is being worked between the GOT and the USG separately and is not part of the discussions or proposals made under the proposal made by DOE.

5. TAEK and DOE agreed that a shipment may be possible if an agreement in principal can be reached, particularly regarding an agreement for consideration for TAEK,s unused U-235 in the existing HEU fuel. Previous DOE proposals considered the unused U-235 contained in the HEU fuel which was rejected noting the lack of an Agreement. TAEK understood that the current proposal is not contingent on an Agreement being in place and that appropriate authorizations have been obtained. Discussions included Dr. Matos, presentation of justification of the quantity of usable U-235

remaining in the HEU. Although, it is believed that TAEK understands this point, TAEK desires an exact number of fuel assembly exchange which is not being offered by DOE.

16. TAEK, DOE, and Mr. Nadal discussed the fuel fabrication schedule of the proposed 8 LEU fuel assemblies with non-US origin uranium. Mr. Nadal explained the estimated cost breakdown for 6 LEU standard assemblies, 2 LEU control assemblies, the supply of non-US origin uranium for fuel fabrication, and delivery and logistical cost for the proposed supply of LEU fuel in consideration for the shipment of the 30 HEU fuel assemblies to be shipped in the calendar year 2005 in accordance with a joint schedule with other reactor operators. Mr. Nadal also indicated that if a contract was made with CERCA prior to the end of July, the fuel might be able to be delivered in February 2006, but also indicated that April 2006 was more possible. DOE described that if an agreement in principal is reached, DOE would provide funding to TAEK to enter into a contract with a fuel fabricator for fuel fabrication. Mr. Nadal will send a draft contract to TAEK the week of July 18, 2005 and is considered almost identical to the contract used to provide the previous 16 LEU fuel assemblies in the early 1990,s. Note: Mr. Nadal was subsequently able to confirm the transportation mechanism on commercial aircraft providing a better cost estimate.

17. Mr. Okay CAKIROGLU again raised the issue to keep the one fresh HEU fuel assembly with an agreement that TAEK would not use the assembly if an agreement to participate is made. DOE responded that that was not possible and not in DOE,s proposal.

18. TAEK and DOE discussed that TAEK currently has uranium credit at DOE,s Y-12 Facility. According to Y-12 the credit is for 4.703 Kg at 85.6%, which translates to approximately 21 Kgs of LEU at 19.75% enrichment. Exact amounts must be verified and is understood that this material is not available to TAEK until the Agreement is in place and is not part of this proposal.

19. TAEK, CERCA, and DOE discussed that TAEK currently has 1.7 Kgs non-US origin uranium credit at CERCA which is available for TAEK,s use, but is not considered in DOE,s proposal.

End Text.  
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